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though not found elsewhere in the British Isles: they seem to form the solitary outlying posts of the geographical distribution of the plants belonging to those Floras.

In Cork, the pretty Orchid, *Neottia gemmipara* (Smith) grows, which at one time was considered to be confined to Ireland, but has since been found to be a North American species. Again, in the county of Galway, the pretty aquatic plant, *Naias flexilis*, another plant of the North American Flora, occurs. In Kerry several of the *Saxifragæ* of the Pyrenees appear, and several of the Pyrenean *Ericaceous* plants extend from Kerry, through Galway, to Mayo; but stop there, and are not found further to the east, south, or north of this island.

Sir W. R. Hamilton, LL. D., read a paper "On some recent Geometrical Results of the Quaternion Calculus," including some which he had mentioned within the last year and a half to the Academy, but of which he had not yet supplied sufficient abstracts to the "Proceedings."

The following donations were received:—

"The History of Dundalk and its Environs," by John D'Alton, and —— O'Flanagan, Esqrs., presented by the authors.

"The Martyrology of Donegal," presented by the Council of the Irish Archæological and Celtic Society.

From J. J. Lalor, Esq., an early noble of Edward IV.

Sir W. R. Wilde presented the following antiquities:—

On the part of Dr. Gray, of Drogheda, a specimen of ancient armour; a small gold fibula; and the remains of a harp which had been found in connexion with them.

On the part of Edmond O'Flaherty, Esq., the cuticular portion of the horn of a short-horned ox, which had been found several feet deep in a bog at Oughterard.

On the part of the Rev. P. Langan, a yellow flint arrow-head, found near The Naul, in the county of Meath.

Captain Meadows Taylor read the following

Catalogue of Indian Musical Instruments, presented by Colonel P. T. French.

Having been called upon to describe the valuable Collection of Musical Instruments of India, presented by Colonel P. T. French to the Academy, I will now proceed to do so, in the order in which they have been numbered. I have to regret that I have not been able to tune any of them: had this been possible, their uses and effects would have been much more readily understood than they can be by mere description; but the greater number of these instruments require steel wire strings of a quality made especially for them by wire-drawers in India, which is not

obtainable in this city. I have therefore to depend upon descriptive detail alone, with notices of the uses to which they are put by native musicians of India, according to my own experience.

Nos. 1, 2, 3, in Catalogue. Native Name झंझ (*Jhanj*).—Metal Cymbals, of various kinds.

These are used as accompaniments to all native music; but in the north more frequently in connexion with that of a religious character than in the south, where in all shapes they are universal. The larger kinds, whether of silver or of bell metal, when clashed together have an effect similar to those in use in our own military bands, and form fitting unison with the hoarse bray of trumpets, the shrill pipes and flageolets, the drums, and large choruses of male voices, by which the temple music, chaunts, hymns, and the like, is generally executed. Cymbals differ in form and sound: some have the effect of large gongs; others, of a softer and more tinkling character, are used with softer music. In all, however, the effect for the most part is to assist in marking the time, which is done very skilfully and evenly by the performers.

In the south of India another kind of cymbal is used, which is in the form of two cups, of bell metal, and of which there is no specimen here. Of these one is held in the left palm, secured by a cord passed round the hand, and is struck by the other, which is held loosely in the right. Players on these cymbals are extremely dexterous, and produce a not unpleasing accompaniment to the voice, or to instrumental music, by striking the cups together in such a manner, outside, inside, and upon their edges, as to form notes in accordance with the voice, or the other instruments by which it may be accompanied. This cymbal accompaniment is played with more execution than may be conceived possible from the nature of the instrument. I have heard *professors* even play solos upon it, which, if not very intelligible as to tune, were at least curious in execution and diversity of *time*, as suited to the various styles of music. Cymbals are used both by Hindu and Mahomedan musicians.

4. थाला (*Thalla*).—Gong.

This needs no particular description. It is beaten in temple music, or as calls to sacrifice or ceremony at different hours of the day, and is used by many of the professional religious mendicants of the country, more especially those who are accompanied by bulls or goats which perform tricks. The thalla or gong, is not used as an accompaniment to vocal music, nor to any but the loud, crashing and generally dissonant music of temple ceremonies. It is not used by Mahomedans except when struck as a clock, noting the hours of the day as shown by the water-clock or hour-glass, and in this respect indeed it is common both to Hindus and Mahomedans.

5. गंटे (*Gunté*).—Bell.

As a musical instrument, the bell is used somewhat in the same manner as the cymbals before mentioned, but more rarely. No ceremony of sacrifice or oblation, however, is ever performed without preliminary tinkling of the bell, which is repeated at certain intervals according to the ritual. No set of sacrificial utensils is complete without one. To describe the use of the hand bell at particular periods of ceremonial observance, would lead me into digressions which have no reference to the subject in hand; but there can be no doubt that the practice of using it is as ancient as Hinduism itself, and the rituals, liturgies, and works on ceremonial observances, define the use to be made of it. By Mahomedans, the use of the bell in any form that I am aware of is unknown.

6. गुंगुरू (*Goongooroo*).—Ankle Bells.

These strings of small bells are used by all dancers, male or female, Hindu or Mahomedan. They are tied round the leg, above the ankle, and produce a faint clashing sound as the feet move in steps, which mingles, not unmusically, with the dance music, or songs which accompany the dance; and they not only serve to mark the time, but to keep the dancer or singer in perfect time and accord with the musicians. These bells are the symbols of their profession with all dancers and singers, and to some extent are held sacred. No dancer ties them on his or her ankles before performance, without touching his or her forehead and eyes with them, and saying a short prayer or invocation to a patron saint or divinity, Hindu or Mahomedan. Nor is it possible, after a female singer or dancer has once been invested with them,—a ceremony which is very solemnly performed, and attended with much cost, —to abandon the professional life so adopted. He or she "has tied on the bells," is even a proverb, to signify that the person alluded to has devoted himself or herself to a purpose from which it is impossible to recede. Strings of these small bells are also used for horses, and tied round the fetlocks of prancing chargers with gay tinsel ribbons or pieces of cloth, also round the necks of lapdogs, and some of a large size round those of a favourite plough or cart bullock. The latter are identical with sleigh bells. No post runner in India travels without a string of them tied on the end of his pole on which is slung the leather bag he carries; and on a still night their clashing sound, besides being heard at a great distance, serves to scare away wild beasts, and to cheer the runner on his lonely path.

7. शिंग (*Seeng*).—Horn.

Used universally through India for signals, watch setting, processions, and the like, both by Mahomedans and Hindus, though the performers, for the most part, are Hindus of low caste. In every village of

central or southern India, it is the business of one or more of the watchmen to blow the horn at sunset, and again at certain hours during the night, or when the watchmen go their stated rounds. In large cities every *mahulla* or ward has a horn blower attached to its night watchmen or police; and there is seldom a guard or detachment of native irregular troops without one. In all processions, temple services, and especially at marriages and other festive occasions, this horn is indispensable; and wailing blasts for the dead are played upon it at the funerals of Hindus of the lower classes and castes, or equally so at the cremations of Hindu princes.

No native authority traverses the country without one, frequently several, in his train; and as towns or villages are approached, the great man's advent is heralded by flourishes of the instrument, blown by the performer, who struts at the head of the cavalcade. These blasts are answered by others from the town or village gate, whence the local authorities come out to meet the visitor and present their offerings of welcome. On these occasions, the horn blowers on both sides vie with each other in producing their grandest effects, and the discordance is generally indescribable.

Itinerant mendicants of many classes use this instrument, both Hindu and Mahomedan; and by the men in charge of droves of cattle carrying grain or merchandize, such as Brinjarees, Comptees, and others, it is sounded at intervals along the road to cheer up their bullocks and keep them from straggling, as well as at their departure from or arrival at one of their stages.

In tone a good Seeng, or horn, is not unlike a common bugle, but has much more power, and in the hands of a good player much more compass. In playing the high notes in many of the calls, shrill quivering cadences are produced, which have a startling and peculiarly wild effect as heard from the walls of some ancient fortress, or from village towers and gates as night falls, and more especially in the otherwise unbroken stillness of night.

I have never heard tunes played or attempted by native horn-blowers, though the modulations of the tones of the instrument are frequently sweet and pleasing; nor are they used in concert with other music, but always independently, as I have already explained. There can be no doubt, I think, that this kind of horn is of very ancient origin and use; and I observe in the Museum of the Academy one ancient Irish or Celtic instrument, if not indeed others, identical with the Indian seeng, and which, like it, were most probably used in battle, or for the purposes already detailed. In shape, in the peculiar adaptation of their joints, and in the form of the mouth-piece, they are identical.

8. तुतुरि (*Tootooree*).—Small Trumpet.

Used chiefly in religious music at temples, and in other religious ceremonies. It always accompanies the next in order, and may be

called the tenor trumpet, the other being the bass. No calls or modulations are blown upon it, but it is sounded at intervals, several being employed, with a wild shrill effect, in concert with the pipes on which the tunes are played.

9. कुर्ना (*Kurna*).—Large Trumpet.

Like the preceding, this is used chiefly in religious processions, or in festivals in honour of local divinities. It has a few hoarse bass notes, which contrast with the shrill tenor of the Tootooree, and appear incapable of other modulation. These instruments are almost invariably played by Brahmins or priests attached to Hindu temples, and by persons attached to the retinues of the Gooroos, Swamies, or spiritual princes of the country, who possess large ecclesiastical jurisdiction, and are provided with them, as a mark of high rank, which is not allowable to others. Occasionally, also, they are met with in the Nobuts, or musical establishments attached by royal permission to nobles of high rank, Mahomedan as well as Hindu; and they are sounded at the five stated periods of the regular daily performance; but they do not exist in all cases,—for there are distinctions in the classes of instruments, according to the rank of persons privileged to play the Nobut, which involve the presence or otherwise of the *kurna*, those of the highest rank only being able to use it. The Nobut, as a peculiar institution of native music, will be explained hereafter. The *kurna*, or large trumpet, is esteemed by all Brahmins to be the most ancient instrument of music in existence, and the sound of it to be especially pleasing to the gods, in various particular ceremonies, and at solemn parts of sacrifice. I need not, however, occupy the time of the Academy with such legends.

It is perhaps worthy of remark, however, that in the procession on the Arch of Titus at Rome, one of these trumpets, precisely similar in shape to that of this collection, is being carried with the sacred candlestick with seven branches, and other trophies from the Temple at Jerusalem; and thus it may be inferred that it was used in the ancient Jewish ceremonies.

10. होलार चा सुनाडे (*Holar cha Soonai*).—11, 12. *Do. Tenor or Second.*—Reed Pipes.

These instruments, which all belong to the same class, are of universal use in all parts of India. What bagpipes are to Scotland or Ireland, these pipes are to India. Although flageolets in appearance, their sound is precisely similar to that of the bagpipes, only perhaps more powerful, and in the hands of good players more melodious. They have seven and eight holes, respectively, and thus would appear to have no great compass; but in execution, whether from the effect of the lips and tongue upon the reed mouthpiece, or the manner of fingering upon the holes, combinations are formed which include semitones and quarter notes, and thus the expression

of chromatic passages *ad libitum*, of which native players are very fond, is given, which, in reality, are very effective. From their great power of sound, these pipes are unpleasant if the performers be near; but at a distance in the open air, and especially among mountains, the effect is much subdued, and often attains much wild beauty and softness. As I have already stated, their use is almost universal. They are, in fact, the only regular out-door instruments of Indian music, and are employed on all occasions, whether in domestic or public religious ceremonials, processions in festivals, temple music, and the like; and the music played upon them varies with the occasion on which they are used. Marches, and military music exceedingly like pibrochs in character—pieces for marriages, for rejoicings, for funerals, welcomings, departures—familiar ballad airs, and the stated music of the Nobut, have all separate modes and effects. In the Mahratta country, in which I know them best, the simple melodies of the people, joyous or plaintive, are performed with a style of execution which is often surprising; and combinations of musical effect are introduced which are equally curious and interesting.

In the Nobut, or honorary band of musicians attached to noblemen, temples, or shrines of saints Mahomedan or Hindu, the best performers obtainable are generally employed; and the performance is accompanied by drums, tenor and bass, and large kettledrums, which are tuned with the pipes, and form useful aids to the general effect. The music played is generally traditional, as no written music is ever played from; but skilful players not unfrequently invent new airs, which are founded upon the several modes of recognised divisions of music, and these are taught to pupils, thus perpetuating continual changes, whether for different hours of the day or night, or for extraordinary occasions. Not unfrequently, very sweet-sounding flageolets are used by Mahratta musicians in company with these pipes, which have the effect of mollifying their shrillness; but I do not find any specimens of them in this collection.

In the Mahratta country the players of these pipes are called *Gursee*, and the office of piper is hereditary in every village or town, accompanied by portions of land, and certain proportions of the crops of the village at harvest, and other hereditary dues and privileges, in common with other members of the hereditary twelve village councilmen. The office of "Gursee" involves sweeping the village temples, lighting the lamps, and officiating at certain ceremonies; and on all occasions of marriages, festivals, funerals, and the like, the Gursee is entitled to certain perquisites, the rights to which are strictly preserved and universally admitted.

14. हौलार चा सुर. 15. (*Hoolar cha Soor*).—Tenor and Bass Drones.

The pipes are invariably accompanied by drones, tenor and bass, or first and second bass, of which Nos. 14 and 15 are specimens. These

instruments have but one note each, which is played without intermission by different persons. They have the exact effect of the drones of bagpipes, and can be tuned to any key which the leading instruments require, by altering the position of the mouthpiece or reed, and the pipes are tuned to different keys in the same manner.

16. पुंगि (*Poongi*).—Snake Charmer's Pipe.

These instruments have six notes, and three semitones. Simple, plaintive airs, generally in minor keys, can be played upon them; but they are not used with other musical instruments, and belong exclusively to the snake charmers and various tribes of jugglers, acrobats, and the like. By the snake charmers, a few notes only are played, which seem to have the effect of rousing the snakes to be exhibited, usually cobra di capellos, to action; and as the reptiles raise themselves on their tails, expand their hoods, and wave themselves to and fro, the players become more excited, while the motion of the snakes is accelerated by the rapidity of their execution. So also in feats of jugglery, or sleight of hand, the *poongi*, accompanied by a small hand drum, seems to assist the performer, especially when throwing knives or balls into the air, catching them in succession, and throwing them up again.

I think there is no doubt that the tones of this instrument have an effect upon all snakes, especially cobras, though this is denied by many. As an instance of this I may mention that one very large cobra, which frequented my garden at Ellichpoor, and of which every one was in dread, was caught by some professional snake charmers in my own presence by means of the *poongi*. It was played at first very softly before the aloe bush, underneath which the snake lived in a hole; gradually the performer increased the tone and time of his playing, and as the snake showed its head, he retreated gently till it was fairly outside, and erected itself in a defiant manner. At that moment another man stepped dexterously behind, and, while the snake's attention was absorbed by the player before, threw a heavy blanket upon it, seizing it by the head under the jaws. The head was then pinned down by a forked stick, and the fangs and teeth extracted by strong pincers. The snake was then turned loose, apparently completely cowed and exhausted, and finally transferred to a basket for education as a performer. There was no mistake as to the identity of the reptile; for a portion of its tail had been shot off in an attempt to destroy it. The same men afterwards drew snakes from the thatch of my house, all of which seemed to obey the fascination of the pipe.

17. सुरसोटा (*Soor Sotta*). 18. तांबुरा (*Tumboora*).

19. *Do.* 20. *Do.*—Four-stringed Lutes, large and small.

The four instruments, 17 to 20, are called *soor sotta*, or *tumboora*, and are only variations of the *tumboora*. They consist of a large gourd

as a body, and a stringboard without frets, with pegs at the end, along which the wires, one brass and three steel, are stretched over a bridge, below which each string is fitted with a glass bead, which improves the tone and assists in tuning. No performance of varied character is made on these instruments. They are tuned to one chord, in whatever key is required—generally of C—and the finger passed rapidly across the strings: or the notes are played separately, but quickly, so as to form the chord in vibration.

Almost all Hindu and Mahomedan singers use these instruments in preference to any other. They are, in fact, only helps to the voice, and afford a simple accompaniment, which marks the time, while it does not interfere with the singer's execution. So much ornament is employed by professional native singers, that they prefer to rely upon their vocal powers alone for success; and it is esteemed a mark of inferiority to use any other adventitious aid than the simple chord of the *tumboora*. In most instances the singer plays himself, though I have occasionally seen two or three instruments, of different sizes and tones, employed where the singer was sure of correctness of time and accord. The *tumboora*, therefore, is confined to the use of singers, male or female, or to accompaniments in recitations, the chaunting of sacred works and hymns, and of scales and exercises in singing. It is never used in company with pipes or flageolets, or indeed with any other instruments; but, as I have described it, the effect is simple, and often very charming when a good instrument is used which has a mellow tone.

21 सितार (*Sitar*). Guitar, or Lute, for Performance.

The *sitar* is another instrument expressly intended for the performance of pieces of music, though I have heard it used occasionally by Rajpoot minstrels as an accompaniment to the voice. It has five wire strings, three steel for treble, and two brass for bass, and eighteen frets, or, with the nut, nineteen; and it will be seen by a glance, that its capability for execution is considerable, though the metallic strings always produce a jangling effect, which is unpleasant. The *sitar* can be altered to any key by moving the frets up or down, and a skilful musician knows how to do this exactly. The execution with which it is frequently played is wonderful, and the performer can execute chromatic passages at will, extending to fourths of original notes.

22. सुरशृंगा (*Soorsringa*). 23. कछवा (*Kuchwa*).

Numbers 22 and 23 are instruments of the same character as 21, for performance only—23 differs from 21, not only in respect to its size and power, but in having two strings only to play upon, tuned in thirds, from strings in the centre, which are tuned to the chord of the key or primary note; and two smaller strings at the side, which represent a high octave, and can be struck as necessary. In playing, the chord in the

centre is not always struck, but only occasionally for effect. This instrument, which is difficult of execution, is not often met with. 22 has only sixteen frets, but eight strings, six from the top and two at the sides, which lie under those played upon, and are used in combination with them for peculiar resonant effects. This variation of No. 21 is, however, uncommon, and confined perhaps to the Guzerat country.

24, 24A, 25. ताउसि (*Taoosee*).

This is another variation of the sitar, No. 21. No. 24 has seventeen frets, with six playing strings; but below them are eleven strings of very fine steel wire, which are tuned to eleven separate notes in the direct scale, and are not played upon. Their use is to effect modulations by vibration of sound, which imparts softness to the melodies executed by the hand. No 25 is an instrument of the same character, but with twelve lower strings, which are tuned as in the preceding, and with the same object.

The Vina.—The best instrument, however, and the most powerful and melodious of this character, is the *vina*, which is wanting to this collection. In form it does not differ much from the preceding, but it has much more power and sweetness, though the peculiar effect of notes sounded upon brass and steel strings is never absent. The finger board of the *vina* with nineteen frets is 2½ octaves, and the frets themselves represent the following notes in English music :—

D, D♯, E, F, F♯, G, G♯, A, B♯, C, C♯, D, D♯, C, F, F♯, G♯, A, D.

To hear, so as to understand, any really classical Hindu music, it should be played upon this instrument; and I have occasionally met with some very learned and accomplished performers, principally from Mysore and the south of India. One of these men, after playing many Hindu airs and variations upon them, changed the key of the instrument, and began a piece which was familiar to me, though from *him* unaccountable; it was, in fact, a great portion of Beethoven's Sonata in A; and he explained that, having once taught an English lady a good deal of his own music, which she played upon the piano, she had in turn taught him this Sonata, which he preferred, he said, above all other "English Music;" and his version of it, considering the defects of his instrument, was really very beautiful. The fact of nineteen frets expressing the notes I have enumerated, and their extension according to the Hindu system of fingering, affords satisfactory proof of the capabilities of the vina, which is honourably mentioned by Sir William Jones in his Essay on Hindu Music, as the standard instrument of India.

26. सारंगि (*Sarungi*). 27. सरोदा (*Sarrooda*). 28. चिकारा (*Chikara*).

These are the ordinary violins or fiddles of India, and are played in the same manner, though differing from them in some respects, as the

instruments in use with us. Of the three, No. 26, is the most commonly employed. 27, *sarrooda*, may be called the tenor or second fiddle, and accompanies 26 in chords, played by the bow, or by hand as a guitar. 28 is an inferior fiddle, which is mostly to be seen in the hands of strolling players, or mendicants, reciters of short plays or poems, and ballad singers. The *sarungi* has four strings of catgut; it is played with a bow; and the execution upon it by accomplished performers is frequently striking and pleasing, while the tones are nearer perhaps in quality to the human voice than those of any other instrument with which I am acquainted. Considering its small size and rude shape, the tone is much more sweet and powerful than would be conceived from its appearance, and this may be accounted for in two ways. First, that the sounding board is of parchment, stretched over the wooden frame; and, secondly, that below the gut strings which are played upon, there are eleven others of fine steel wire, tuned exactly with the scale, and thus the effect of the notes played is perhaps increased by vibration upon the wire notes beneath.

The *sarungi* is used by Mahomedan musicians more than by Hindu; and I imagine it may have been introduced into India by the Mahomedans, possibly from Persia. It forms an excellent accompaniment to the voice; and an old friend of mine, an excellent musician and violin player, the late Captain Giberne, Bombay Army, used to prefer one of these instruments to his own violin for concerted pieces in which the violin took a soprano part. The capability of the *sarungi* for the execution of chromatic passages and harmonies is, to some extent, equal to our own violin; but it would be quite possible to improve the native instrument without altering its character, and in such case it might prove a useful addition to our own orchestral effects.

From its size, the *sarrooda* is more powerful, but more difficult of execution; and it combines the effect of a guitar, as it is sometimes played in accompaniment, and the violin.

29. सारमंदल (*Sar Mundal*).

This may be styled the Indian dulcimer. It is by no means common, and therefore good execution upon it is not often met with, nor indeed at any time is it very pleasing, owing to the continual jangle of the wire strings.

30. बीन (*Been*),

Wire-strung guitar, which is chiefly used by mendicants and religious devotees in recitations, hymns, and other sacred singing. In some degree it resembles the *vina*, but has not its power or sweetness, nor indeed capability of execution. This instrument has twenty-three frets, and there are five strings to be played upon, with two others at the side for occasional effects.

31. तंतंणि (*Toontoonee*),

An instrument with one wire string, and of a rude character. It is invariably used by mendicants and common ballad singers in the Dekhan, and the wire is struck rapidly by the finger, or a quill, as an accompaniment to the voice. The string can be tuned to any key required.

32. डफदे (*Duffdé*). 33. *Do.* 34. हलकया (*Hulkya*).

35. टायरा (*Dayra*). 36. डफ (*Duff*).

These five instruments belong to one class, the common tambourine drum of India, which is played, partly by sticks, partly by the hand. The performer holds two long thin pieces of wood or twig in his left hand, which he rests upon the frame of the instrument, which is strung over his shoulder, while with the right he beats it with a short thick drumstick. The measure and tone can be changed and varied by the manner in which the notes are played by the sticks in the left hand, and in this respect the drummers are very expert. These instruments form the ordinary accompaniments to the horn, No. 7. Every village, or watch on town bastions, fort walls, and the like, has one; and in native armies the *duff* is beaten furiously on occasions of attack. In all sorts of processions, festivals, and the like, they are employed; but they do not aspire to the refinement of other drums of a more scientific character, which will be described in turn.

37. दोल (*Dhól*). 38, 39. दोलकि (*Dhólkee*).—Ordinary Drum and Little Drum.

Both played by hand as accompaniment to the voice, or struck with a stick when in concert with pipes or loud instruments. Both these instruments are of universal use, but are seldom employed by professional musicians.

40. पस्ववाज (*Pukhwaj*).—Tenor and Bass Drum,

Which is used exclusively as accompaniment to the voice, and in all concerted music. Some musicians prefer the *tubla*, which will be described hereafter; and perhaps the *pukhwaj* is employed more than the other by Hindu professionals. On this instrument players are exceedingly expert; and by the manner in which both sides, tenor and bass, are played by the hand, the points of the fingers, and occasionally the palms, the notes which are produced assist the voice; while the time, however complicated, is kept with the greatest exactness. This drum is tuned by the side cords, and by a composition laid on the centre, which assists the sound; and a piece of dough is usually put upon the bass side, which tempers the skin, and keeps it in tune. Among instrumental performers this drum, or the *tubla*, is considered the standard instrument, and all others, whatever they may be, are tuned to it.

41. हुडुक (*Hoodook*). 42. डाक (*Dāk*).

These drums are used by ballad singers, mendicants, and the like, and need no particular description. The latter use them in concert with begging petitions in the name of some divinity, which are often sung to wild or melancholy cadences.

43. बाहया (*Bahya*). 44. जिल्ला (*Jilla*).—Common Copper Kettle Drums,

Which need no particular explanation; both are played with sticks. They are often found with small parties of village musicians, and in concert with pipes.

45. सबाल (*Sumball*).—Tenor and Bass Drum.

Of the same character as No. 40, Pukhwaj; but not so melodious in tone, nor so much used.

46. तबला (*Tubla*).

These drums, tenor and bass, rank with the pukhwaj, and are preferred by many players. They are tied in a cloth round the waist, when played, and the hands are exclusively used, with extraordinary execution. The tone is mellow and delicate, and, harmonized with the violins, forms an excellent accompaniment to the voice. The *tubla* drums are made of copper, and, while equally sweet, have perhaps more resonance than the *pukhwaj*, which is of wood.

Drum-playing on these instruments is quite an art among Indian performers. They mark the time, which is of a very complicated nature, and differs in many respects from ours, to suit the varied modes of the music. On this account, and from the very florid passages required, years of study and practice are required by the performers.

47. नल (*Nul*).—Kettle Drums,

Generally used on horseback, much like our own, and beaten by sticks. In native cavalry, and in our own irregular cavalry regiments, they are carried in front on the march, and by their sonorous notes the line of progress is indicated to prevent straggling.

48. डुगडुगा (*Doogdooga*).—Small Hand Drum,

Used chiefly by mendicants and ballad singers.

49. नोबत (*Nobut*).

This instrument, which is the largest kettle drum used in India, gives the name to the "Nobut," or honorary music before alluded to.

It has a deep, mellow sound, and is played and used much like our own bass drum. With it are usually associated the smaller kettle drums, 43 and 44; and a performance upon the drums alone forms part of every period of playing throughout the day, though they accompany the pipes and trumpets in all other music executed.

50. शंख (*Shunk*)—CONCH SHELL,

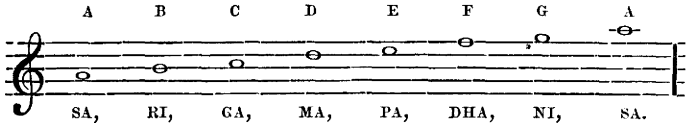
Is not used as a musical instrument, but is sounded during religious ceremonials, in processions of Hindu worship, and before idols. No tune, so to speak, can be played upon it; but the tone is capable of much modulation by the lips, and its clear, mellow, humming notes, heard at early morning and eventime from Hindu temples, and the groves about them, have a peculiar though melancholy effect, not without charm.

The above concludes the catalogue of these instruments; and as the foregoing details may be esteemed incomplete without some notice of Hindu music as a science, the following remarks upon it, brief as they must necessarily be, may serve in some respects to supply the deficiency. I do not put them forward as original; for it would be impossible for me, without a greater acquaintance with Hindu music than I possess, to write anything more complete than Sir William Jones's Essay, which gives details to a greater extent than those with which I can presume now to occupy the time of the Academy.

First, then, as to notation—we find the Hindu gamut to be in essentials similar to our own. There are eight notes in their scale, which form the foundation of the primary modes, or "Swaras," and which are named as follows:—

Sharja,	Punchama,
Rishaba,	Dhaivata,
Gandhana,	Nishada.
Madhyama,	

of which the initial letters form the gamut:—*Sa, Ri, Ga, Ma, Pa, Dha, Ni, Sa,* corresponding with our *Ut, Re, Mi, Fa, Sol, La, Si, Ut,* and the Hindu scale may be thus written:—



But the Hindoos have adopted no especial symbols, like ours, to express sound or time; and in writing music, according to the ancient system, the air and time of the melody are expressed by lengthening or shortening the vowels attached to each initial consonant, and repeating the

notes as they may fall together in the air.* This in itself, it will be admitted, is rude and unsatisfactory; but by certain signs, such as dots, curves, and other marks, the written notation becomes intelligible to performers; and as taught at present, the scales, and vocal and instrumental exercises of learners, some of which are extremely complicated and difficult, consist of repetitions of the primary notes of the gamut, in the time and tune intended.

Each note is divided into halves, thirds, and fourths, which are defined by signs and marks attached to the notes of the gamut, and can be expressed by the voice; or, taking the vina as the standard instrument, on and between the frets, by a manner of fingering known to performers and teachers; and the *sarungi*, or violin, can be used with similar effect.

Again, taking each fundamental sound separately, the classical definition or doctrine of sounds admits and defines seven variations to each, which become the leaders of a series of other modes. Thus we find $7 \times 12 = 84$ modes: seven primary, and seventy-seven secondary, which are known under their separate appellations. The requirements of the classical system are, that each melody formed upon any of the above primaries or other adjuncts should be complete in itself; and no deviation from this rule is recognised or permitted. The modes are distributed over the hours of the day and night; and no professor of Hindu music, or educated performer, would be held excusable by a critical audience, if he transgressed propriety so much as to introduce at a wrong period songs, or instrumental performances, which belonged to another.

In illustration of this rule, Sir William Jones observes:—"A melody, or phrase, commencing with

D . E . F♯ G♯ A . B . C♯ D .

where the first semitone appears between the fourth and fifth notes, and the second between the seventh and eighth, as in the natural scale; and the G♯ and C♯, or ga and ni, of the Indian authors, form our major mode of D:—such a melody must end with the fifth note from the tonic, and it would be a gross violation of musical decorum to sing it at any time except the close of day."

Another mode of division, which is perhaps more modern, is the division of the six primary notes into fifty-four modes, by an allegory. Bhairava, Malava, Sriraga, Hindola, Dipaca, and Megha, are six nymphs, each of whom is married to a Ragini, and each has eight children. Thus we have six nymphs, as primary notes; six semitones, as husbands; and forty-eight children, as minor modes or divisions; making fifty-four in all.

A third system divides the rágs or modes into six primary, and thirty secondary. Each of these is known by the note which begins it or ends it. As an example, the Sri raga corresponds with our major scale;

* In like manner our own music might be written and read from the notes themselves.

Sa, or A, is its principal note, with Pa, or E, diminished by one "*sruti*," or part of a note. Thus, we find that this mode represents the ordinary scale, ut, re, mi, sol, fa, la, si, ut, with a minor tone, or three srutis, between the fifth and sixth notes.

I have mentioned in my descriptions of the instruments, that chromatic and enharmonic passages of great intricacy can be executed upon several of them—the *vina*, the *sarungi*, &c. This will be accounted for by the fact of the system of music prescribing twenty-two srutis, or divisions of notes, to each whole octave; or furnishing each note, or those which according to the requirements of the particular mode may need it, or the particular melody in the mode, with semitones, thirds, and quarters of notes, as may be necessary. It would seem, however, as if more than "twenty-two srutis" to an octave were inadmissible; and the notes to which any number of srutis is admissible is determined by the key note, or primary.

"Semitones," says Sir William Jones, "are placed as in our own diatonic scales, the intervals between the fourth and fifth and first and second are major tones; but that between fifth and sixth, which is minor in our scale, is major in theirs. The two scales are made to coincide by taking a 'sruti' from Pa, or E, and adding it to Dha, or F; or, in Indian terms, by raising Savaretna to the class of 'Santa,' and her sisters. Every sruti is a little nymph; and these nymphs, or srutis, or quarter notes of the fifth note, Pa, or E, are called, Malini, Chapala, Sola, and Savaretna."

In like manner, every note has its fairy attendants attached to it; and these being furnished with names, the separate portions of each are known at once, in their proper order, and without confusion, to scientific Hindu musicians.

There are many Sanscrit, as well as Teloogoo, Canarese, and Tamul works on music, still in existence. Indeed, in the south of India music appears to have been maintained, and cultivated as a science, long after it had ceased as such in the north. Mahomedan historians of the period relate, that when the Dekhan was invaded by Alla-oo-deen Togluk, in A. D. 1294, and the conquest of the south of India completed by the Mogul general, Mullik Kafoor, several years afterwards, the profession of music was found to be in a condition so far advanced of the north, that singers, male and female, musicians, and their Brahmin instructors, were taken with the royal armies and settled in the north. The works that remain on the subject have been examined by competent Oriental scholars, who have discovered that music as a science held a high place among ancient Hindus, and became the subject of learned, though pedantic, treatises on doctrines of sound, variations of scales, accord of musical instruments, divisions of modes, singing, and instrumentation; but no where does it appear that the laws of harmony had ever been discovered or invented; and, as a consequence, all Indian music is wanting in this most essential particular. This, and the pedantic divisions into modes, so jealously guarded from infringement, have prevented Hindu music and its science from that improvement and ex-

tension which have been attained elsewhere. In this respect music is, like all other sciences of the Hindus, and their philosophy, unprogressive and effete. In performance upon the *vina* or *sarungi*, the performer's ear, and the capabilities of the instrument, lead players into thirds, fifths, and octaves, with the laws of which they are unacquainted; but all singing and playing are in unison, and whether trebles, tenors, or basses, which are often joined, and in all instrumental music, the execution is of the same character. It is needless to say that this inevitably produces monotony, and causes Indian music to be generally uninteresting, if not repellant, to European ears.

I am bound to state, however, that very little of the really good or classical music of the Hindus is ever heard by European ears. What is ordinarily played to them is the commonest ballads and love songs, with modern Persian and Hindustani ditties, sung by ill instructed screaming dancing women, at crowded native durbars, marriages, and other ceremonials. The late Nawab Shumsh-ool Oomrah, of Hydrabad, for instance, used to cause from ten to twenty sets of dancers and singers to stand up together, each set consisting of several women as singers, and a proportion of instrumental performers. All sang and played together whatever they pleased, and the clamour of different tunes, with all their varied accompaniments, was quite indescribable. It is no wonder, therefore, that the English guests stopped their ears, and declared native music to be abominable. Need I say, that, were all the best singers and bands of Dublin to play the most beautiful music at their command at the same moment, the effect might even be more painfully hideous!

But music of much intrinsic beauty, nevertheless, exists; and the ancient râgs or modes, with their simple melodies, and the marvellously difficult, and often charming scales, *droopuds* and *laonees*, and other exercises of vocal and instrumental performance, and the plaintive and beautiful ballads of the Rajpoots and Mahrattas, would, I think, amply repay collection by one competent to make it. It would be a grateful gift to the musical world at large, were the government of India to undertake a complete collection and exposition of the best Hindu and Mahomedan music, as it exists in the north of India, in Rajpootana, and Guzerat, in the southern provinces, and midway in Maharashtra and Bundelkund. The music of all these provinces differs as much in character as national music in Europe, and there is a great deal of it that is very interesting. How many of the old râgs or modes are illustrated by love songs! and how many of the chivalrous events of ancient and mediæval times are subjects of ballads much like our own, descriptive, picturesque, and most original both in subject and music! In the Mahratta country, I can state of my own experience that ballads and love songs are innumerable, whether of the old Mahomedan period, the Mahratta risings against them, and the more recent English and Mahratta wars, and are full of local adventure and spirited description; while in all the grades of love songs, under their several local denominations, there are scores, nay, hundreds, in every province of India, worthy of being rescued from their present

obscurity, and of being preserved among the musical records of the world.

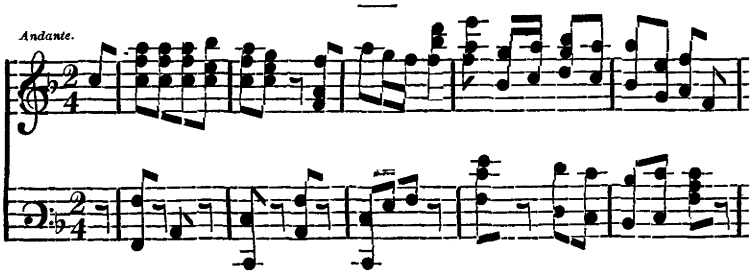
In his Essay, and to illustrate the manner of notation of the ancient Hindu system, Sir William Jones has quoted a very simple air of Soma's, who was one of the most ancient Hindu writers on music, and composers. This, with a few airs contributed by Colonel Tod, in his work on the Rajpoots, form nearly all the Hindu music now on record; and these, with some common tunes picked up from ordinary singing men and women at nautches, are the only specimens of Indian music now available for reference or comparison. There is much to be regretted, I think, in this, not only because national music is always valuable in an ethnological point of view, but because it would afford most interesting comparisons with the ancient national music of Europe, which it so much resembles. I venture to offer a very simple contribution,—a plaintive Hindu air of the most ancient class, to which I have adapted English words in partial paraphrase of the original Hindee, and to which one of my daughters has added enough accompaniment to admit of its being sung by a soprano voice to the pianoforte.

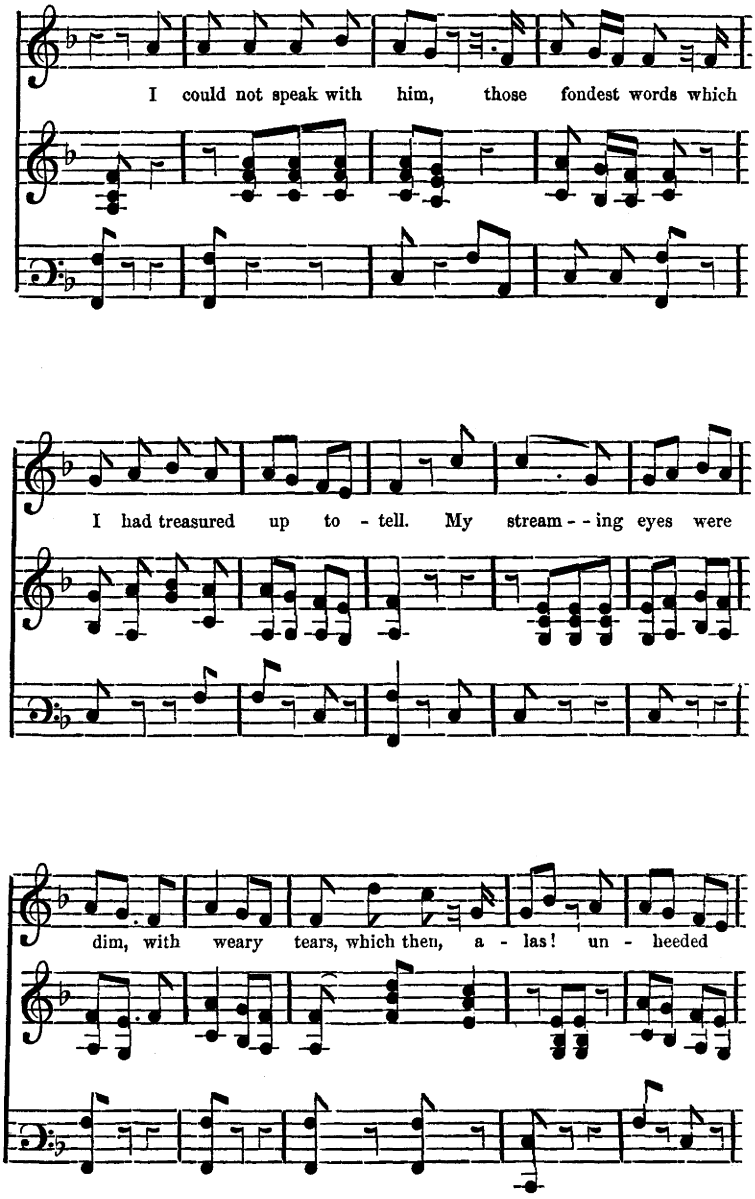
I cannot close this paper without adverting to the value and importance of this collection of musical instruments, which I consider to be unique. I have never seen so large a one in the possession of any native connoisseur, and my impression is that there is nothing so complete in any European museum. A few, and very few, instruments are wanting to make it perfect, and these might be easily supplied. On these grounds, therefore, I consider that this Academy is under peculiar obligations to Colonel French for his valuable donation,—valuable alike from its original cost and expense of transport, and as an illustration of the musical tastes and aquirements of India; and I have no doubt that suitable acknowledgment will be made to him.

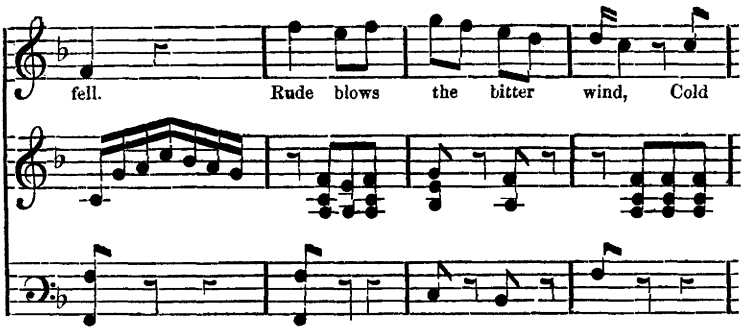
INDIAN AIR.

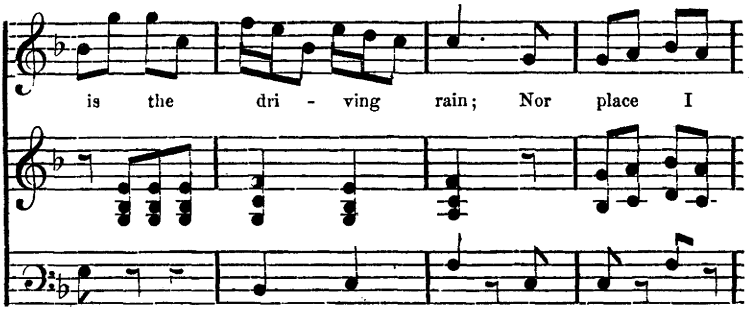
Kurna na paee bât.

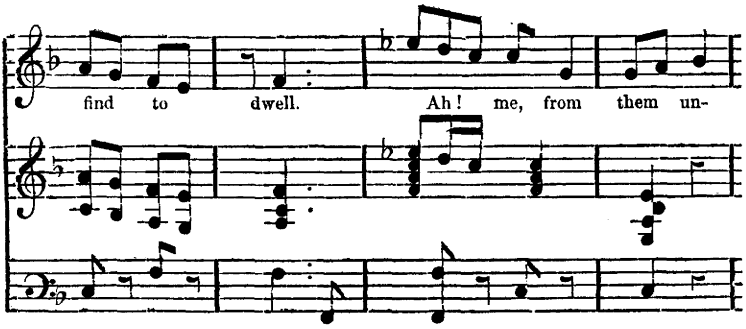
Words by M. T., from Hindu Ballad. Accompaniment by A. M. T.

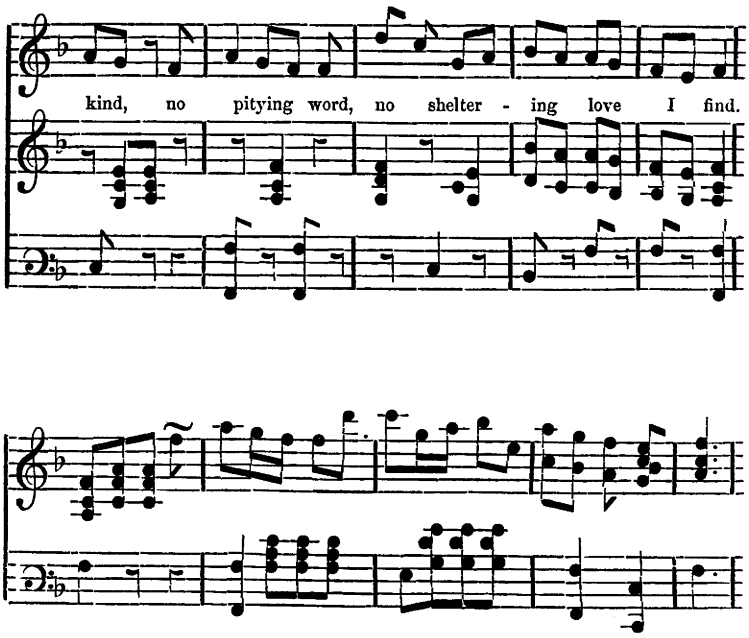



I could not speak with him, those fondest words which
I had treasured up to - tell. My stream - - ing eyes were
dim, with weary tears, which then, a - las! un - heeded


fell. Rude blows the bitter wind, Cold


is the dri - ving rain; Nor place I


find to dwell. Ah! me, from them un-



Ah! now I vainly cry
Dear lord, dear heart so fondly loved,
Thou would'st not see me lie
So desolate, nor fail that love so truly proved.
  Rest! rest, oh, breaking heart;
Peace cometh now to thee, that nought had ever mov'd,
  Ah! why delay thy dart
  Kind death—take me to him, that never more we part.

ORIGINAL HINDEE WORDS.

Kurna na päee bát
Ab myn. Peea soo jeea ke bat
Oodowjee! tahreean, myn bulaeen leongi ho!
Mohe le'chulo oonhen ke pas.